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ABSTRACT

Officials in charge of California's community colleges and universities worked with an advisory committee consisting of representatives of two- and four-year public and independent colleges to develop a plan to ensure an adequate nursing workforce for California. The group reviewed existing nursing education programs, trends in the health care industry, and changing health care needs. The following were among the group's key findings: (1) because of its changing demographics, California will need an increased number and changed mix of registered nurses (RNs) and specialty nursing services; (2) the acuity of patients in hospitals and the community has increased the demand for highly skilled RNs and additional RNs with bachelors and masters degrees; (3) state-supported nursing programs require additional resources to increase the education of RNs; (4) clinical placement opportunities must be developed before nurse training programs can be expanded significantly; (5) increasing nursing enrollments will require increased financial aid; and (6) California needs a system to address efficient statewide workforce planning and production of RNs. Six recommendations regarding state planning and funding of nursing education were presented. (The bibliography lists 10 references. A possible scenario for increasing nurse graduates in California and list of the ad hoc committee on nursing's members are appended.) (MN)

**REPORT OF THE CHANCELLOR OF THE CALIFORNIA COMMUNITY
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CALIFORNIA, AND THE PRESIDENT OF THE ASSOCIATION OF
INDEPENDENT COLLEGES AND UNIVERSITIES TO THE GOVERNOR
AND LEGISLATURE**

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AB 655 (Scott)

Educating California's Future Nursing Work Force

Executive Summary

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The past decade has been one of great change in the evolution of health care, demographics in the state of California, and enrollments in higher education. Decreased funding to higher education and changing student enrollment patterns for the past several years have resulted in fewer graduates from nursing education programs. These trends have impacted the supply of Registered Nurses (RNs). Changing demographics have also impacted the need for Licensed Vocational Nurses (LVNS).

Conservative estimates indicate California will have a shortfall of 25,000 nurses within six years if changes in the health care industry and higher education do not occur. This shortfall will result in a public health crisis for the growing and aging population. The impending nursing shortage in California is unlike any the state has experienced in the past. Resting in the balance of California's nursing workforce planning is the quality of patient care. An insufficient supply of trained nurses threatens to jeopardize public health. Understaffed facilities that result in additional overtime work hours and increased workloads erode the attractiveness of the profession to those seeking to enter nursing and lead to greater attrition of current nurses. Effective workforce planning, adequate educational resources, and responsible employment practices can ensure the supply of RNs needed to provide care to California patients.

AB 655 (Scott) required the Chancellor of the California Community College (CCC), the Chancellor of the California State University (CSU), the President of the University of California (UC), and the President of the Association of Independent Colleges and Universities (AICCU) to issue a joint report to the Governor and the Legislature with respect to a recommended plan and budget for:

- significantly increasing the number of students graduating from nursing programs in the State of California; and
- providing specialty training to licensed nurses, including training in the nursing specialty areas of critical care, emergency, obstetrics, pediatrics, neonatal intensive care, and operating room nursing.

AB 655 further required the offices of the Chancellor of the CCC, the Chancellor of the CSU, the President of the UC, and the President of the AICCU to form an advisory committee, composed of representatives of the Board of Registered Nursing, the Licensing Division of the State Department of Health Services, organizations representing licensed nurses, organizations representing hospitals, long-term care facilities, and other employers of registered nurses, the California Strategic Planning Committee for Nursing, professional nursing organizations, hospital-based board-approved nursing programs, and other interested groups.

This report describes background information related to California's future nursing work force needs, key findings of the committee, and recommendations for further planning and activities. The need for an additional 25,000 RN graduates this decade is demonstrated and a possible scenario for increasing graduates from all nursing education program types is presented (see Appendix A).

The Offices of the President of the UC, Chancellor of the CSU, Chancellor of the CCC and the President of the AICCU recognize their roles and responsibilities, along with those of the health care industry and the State of California, to meet the state's nursing workforce needs.

Key Findings

Finding 1: The changing demographics and growth of the state's population indicate a need for an increased number and changed mix of Registered Nurses (RNs) and specialty nursing.

Finding 2: The nursing workforce is disproportionately balanced with respect to age and other demographic factors.

Finding 3: The acuity of patients in hospitals and the community has increased resulting in an increased demand for highly skilled RNs and additional RNs prepared at the baccalaureate and masters degree level.

Finding 4: State-supported nursing programs require additional resources to increase the education of RNs (like other high-cost programs).

Finding 5: Clinical placement opportunities need to be developed before nurse training programs can be expanded significantly.

Finding 6: As with other programs where graduate and professional training is required, increased financial aid is needed to increase nursing enrollments in both the public segments and the independent sector.

Finding 7: California requires a system to address efficient statewide workforce planning and production of registered nurses and other workforce professions. Since this issue impacts public health and involves a potentially significant commitment of state funds, the Governor may wish to convene a task force. This task force may include representatives from the four segments of higher education and the health workforce professions. The goal of the task force would be to consider the recommendations of this report in tandem with related nursing issues

Recommendations and costs

A number of recommendations and short-term initiatives with associated costs have been identified by the higher education segments. Long-term funding is also required to support statewide outreach programs, opening of new programs, expansion of current programs with additional faculty positions and additional equipment costs, support of education and practice partnerships for specialty preparation, and student financial aid.

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AB 655 (Scott)

Educating California's Future Nursing Work Force

In recognition of the growing nursing shortage in California, the legislature passed Assembly Bill 655 (Scott) in 1999. AB 655 charged the Chancellor of the California Community Colleges (CCC), the Chancellor of the California State University (CSU), the President of the University of California (UC), and the President of the Association of Independent California Colleges and Universities (AICCU) with developing and submitting a plan to the legislature to ensure an adequate nursing workforce through the state's public and private colleges and universities. AB 655 called for the educational representatives to advise and make recommendations to the legislature and the Governor.

The legislation called for the representatives of two- and four-year public and independent colleges to convene an advisory committee to assist in the development of this plan. In support of this goal, the Board of Registered Nursing (BRN) sponsored several meetings for the nursing leadership from industry, associations, and the schools of nursing to discuss strategies to address the state's nursing shortage. As specified in the legislation, individuals on this ad hoc committee included representatives of not only higher education but also the following: the Board of Registered Nursing, the Licensing Division of the State Department of Health and Human Services, organizations representing licensed nurses, the California Strategic Planning Committee for Nursing, professional nursing organizations, organizations representing hospitals, long-term care facilities, and other employers of registered nurses, and other interested groups. Those participating in the work of this committee are included in a membership list in Appendix B.

Charge to the Ad Hoc Committee on Nursing

AB 655 called for the report to include a recommended plan that may include alternative strategies and a budget for each of the following:

- significantly increasing the number of students graduating from nursing programs in the State of California; and
- providing specialty training to licensed nurses, including training in the nursing specialty areas of critical care, emergency, obstetrics, pediatrics, neonatal intensive care, and operating room nursing.

The ad hoc committee encourages entities providing nursing education and training programs to conduct activities to achieve voluntarily the recommendations of the committee specified in the following report.

Projected Need for Registered Nurses in California

Based on projections from the California Employment Development Department (EDD)', the California Strategic Planning Committee for Nursing (CSPCN) estimates that California will need 67,440 more registered nurses (RNs) in 2006 than in 1996.² CSPCN projects that California will have 42,372 more active RNs by 2006 than there were in 1996 if current RN pre-licensure program graduations remain constant, retirement rates remain constant and the current increases in the number of RNs due to migration into California continue. This will leave a shortfall of 25,069 RNs to meet the current health care needs of Californians in the very near future.

The actual number of RNs needed may be substantially higher. Factors such as the proportion of RNs per 100,000 population, proportion actually working in the field, age of the work force and current reliance on nurses educated outside of California may affect the adequacy of the future RN work force.

- CSPCN conducted a health care organization employer intention survey in 1997-98. Data from the survey identified vacancy rates among all California employment sectors in 1997 of 8.5% for RNs, 5.2% for LVNs, and 7.8% for unlicensed assistive personnel. Among acute care hospital employers the mean vacancy rate for RN staff nurses was 10.6%.
- The national sample survey of RNs conducted in 1996 indicated that California had 566 working RNs per 100,000 population. This proportion is the lowest in the country and is 232 working RNs per 100,000 population below the national average.³
- Fully 85 percent of RNs with active licenses living in California work full or part-time in nursing.² This percentage is slightly higher than the national average of 82 percent³ and represents a decrease in the number of RNs that can be recruited back into the nursing work force.
- California's nursing work force is aging which may accelerate time to retirement or reduction in working hours. The 1997 California Board of Nursing sample survey indicated that the mean age of working RNs was 44.6 years of age with 30 percent of the work force over the age of 50 years.⁴
- California relies heavily on migration of personnel in specialized fields such as nursing. Currently, 50 percent of California's RNs were educated in another state or country.^{4,5} However, enrollments in schools of nursing nationally are decreasing. The American Association of Colleges of Nursing reports an average decrease of 3,616 enrollments per year (a decrease of 5% per year) over five years in a cohort of 326 baccalaureate nursing programs.⁶ The Board of Registered Nursing estimates a 20% decrease over the last seven years in the percentage of nurses migrating from other states.
- The CSPCN survey of employers identified employer intention to increase employment of RNs by 3% by the end of 1999. This increase is intended even though these data were obtained during a period of health care corporate restructuring.
- The problems related to the shortage of trained nurses is exacerbated by a concurrent trend in nursing faculty. The demographics that are facing the profession are replicated in the professoriate.
- The clinical experience is a major aspect of nursing education. Clinical placement slots need to be

developed and expanded to address the lack of clinical assignments.

- California's population is expected to increase by 52% between 2000 and 2025 with half the increase to come from foreign migration.⁷

Enrollment Issues for RN Pre-Licensure Nursing Students

Enrollment Capacity in California Nursing Programs

There are three types of nursing education programs that prepare individuals to sit for the examination for licensure as a Registered Nurse in California:

- California Community Colleges (CCC's) offer a program leading to the associate degree in nursing (ADN) at 68 of the 107 community colleges in California. This program provides two years of lecture content and clinical experience in nursing with an emphasis on hospital-based care and prepares students to sit for the examination for licensure. Prior to entering the program, students must complete at least one year of pre-requisite course work.
- The baccalaureate degree in nursing (BSN) is offered by 13 California State Universities (CSU) and 13 private colleges; University of California, Los Angeles (UCLA) is approved to offer the BSN, but funding for the program was discontinued in 1994. This program is four to five years in length depending on the number of pre-requisite science and general education requirements. The programs provide two to three years of lecture content and clinical experiences in acute care, outpatient care, home care, and public health as well as preparation for nursing leadership and management.
- Entry-level master's (ELM) programs are offered to college graduates at one CSU, two independent colleges and at the University of California, San Francisco. These programs require one to one and a half years of pre-licensure nursing course work prior to specialty preparation in such areas as acute care, primary care, case management, and public health. These programs also provide advanced preparation for nursing leadership and management.

While the need for more nurses has increased dramatically in recent years there has been a decrease in the number of students who are enrolled in California nursing programs. In 1997-98, there were 6,070 RN pre-licensure admission "slots" available; 96.9% were filled.⁸

In some sectors of higher education limited availability of nursing seats has resulted in a number of qualified applicants who have been turned away from nursing programs. In 1996-97 a CSPCN survey revealed that at least 658 vocational, 3,246 associate, and 989 generic baccalaureate student applicants who were qualified were denied admission to pre-licensure programs.² Nursing directors believe these numbers may be overstated by the extent to which students may be admitted to another program.

Decreasing enrollments led to a relatively small but important decrease in the number of nursing graduates during the years from 1994-95 to 1997-98 (See Table 1). In 1997-98 there were 5,050 graduates from California RN programs; 1,601 were from baccalaureate programs, and 3,449 (or 68%) were from associate degree programs. Currently, 70% of individuals completing their RN pre-licensure education in

California graduate from ADN programs.

Table 1. Number of Nurse Graduates from California Colleges and Universities, 1994-95 through 1997-98

	Year			
	1994-95	1995-96	1996-97	1997-98
BSN	1,581	1,521	1,336	1,601
ADN	3,652	3,689	3,366	3,449
ELM	59	N/A	N/A	29
All Programs	5,292	5,210	4,702	5,079

Source: State of California, Department of Consumer Affairs, Board of Registered Nursing, 1994-95 through 1997-98 *Annual School Reports*.

CSPCN identified California employer demand for a 15% increase in the relative proportion of RNs with baccalaureate degrees to RNs with associate degrees and a 10% increase in nurses with masters degrees.² RNs with baccalaureate and master's degrees are prepared to provide care in a variety of settings and possess the management and leadership skills to oversee care given by licensed and unlicensed personnel. Baccalaureate prepared RNs must exercise leadership, critical thinking, independent decision making, autonomy, and management for complex new and evolving technology and the critical monitoring of complex system failure patients. Baccalaureate and master's prepared RNs also may obtain public health certificates, a much-needed resource at this time when public health mandates have increased the need for public health nurses, and positions are very hard to fill.⁹ Therefore, the proportionate emphasis should be on baccalaureate and higher degree educational funding. However, if the goal of producing 25,000 additional new nurses by the year 2006 is to be achieved, at least half of the additional nurse graduates need to come from associate degree programs. Moreover, if graduates of associate degree programs are provided with sufficient academic and financial support, they represent a potential cohort of students who could continue to be educated at the baccalaureate and masters levels. A spreadsheet showing a possible scenario for increasing enrollments to accomplish the goal of educating an additional 25,000 nurses during this decade is presented in Appendix A.

Diversity of Enrollments and Completions

Compared to other higher education programs, nursing students (as a percent of enrollments and completions) are a relatively diverse cohort. However, Hispanic students are not reflective of their general population in California either as a percent of enrollments or completions. Additionally, both Hispanics and African Americans represent a decreasing percentage of nursing enrollments and completions as they progress through the educational continuum.

Diversity by gender is also an important issue within the nursing student population. Males comprised only 16% of all enrollments in 1997-98. They only comprised 13% of all completions during the same year. As with African Americans and Hispanics, they represented decreasing percentages as they progressed through the educational continuum. For example, males only received 7% of the entry-level master's degrees in 1997-98.

Patterns are replicated or become even more pronounced at the faculty level. In 1998 White faculty members accounted for 74.78% of all nursing faculty; African Americans for 7.59%; Hispanics for

4.69%; Asian American/Pacific Islanders for 7.86%; and American Indians for .82%.

Funding For Instruction

Funding for California's public higher education institutions is based on a Full Time Equivalent (FTES) or Average Daily Attendance (ADA) basis, and the mix of programs on individual campuses is based on an overall average faculty-to-student ratio. Enrollment demand has increased in specialized areas that require lower faculty-to-student ratios; therefore, it may be necessary to review enrollment funding, as workforce development needs change in the future. Clinical nursing programs require high faculty-to-student ratios in order to meet accreditation, hospital, and safety requirements when supervising students in clinical settings. While faculty-to-student ratios typically range from 1:30 to 1:40, for many specialty programs such as nursing faculty-to-student ratios average 1:10 in clinical or laboratory settings.

Faculty Recruiting

Nursing program administrators report difficulties encountered in hiring and maintaining faculty. In 1998 CSPCN conducted a survey to determine the extent of the problem.² Administrators from 17 baccalaureate and higher degree programs and 18 from associate degree programs responded. The 35 respondents represented 35% of the 99 approved schools in California offering programs leading to licensure. Of the 341 full-time positions in the 35 institutions, 40 (12%) were open for the 1999-2000 school year. In addition, 21 retirements were expected for 1999-2000, potentially bringing the openings to 61 or 18% of the full-time positions.

A difficulty in recruiting faculty cited by nursing program administrators in the survey results in a critical shortage of nursing faculty who are prepared at the master's and doctoral levels for teaching. Specifically, the community colleges need nurses with master's degrees to teach, and the four-year and graduate institutions need nurses with PhDs to teach.

Part of the reason for this phenomenon is the inability of colleges to compete with industry for these highly skilled nurses because of limited faculty salaries. The survey revealed that 32 faculty members were lost to higher paying assignments in clinical positions. This is consistent with other discipline areas where college and university faculty salaries cannot compete with the private employment sector.

Program Equipment Costs

In addition to funding for faculty positions sufficient funding is needed to purchase and maintain state-of-the-art equipment used for teaching. Like many other technical and professional programs, nursing education depends upon up-to-date learning labs. Equipment costs for basic materials such as laundry, sterile supplies, and other disposable items for nursing practice labs make nursing program maintenance costs high. In addition, the need for electronic equipment in nursing labs is essential and costly.

Budget allocations to colleges and universities must recognize that, like engineering and computer science programs, there will be significant costs to purchase, maintain, and replace equipment for clinical nursing programs. As academic programs become more technical, the State must continue its commitment to provide quality educational programs supported by the most modern equipment available.

Financial Support for Students

The State's Cal Grant programs are designed to provide financial assistance for qualified undergraduate students who demonstrate need. The Education Code calls for the number of Cal Grants to be equal to 25% of the high school graduating class. Traditionally, the Cal Grant programs have not been funded sufficiently to meet the percentage mandated by the Education Code. During the period that this report was being written, the leadership of the Legislature has made a commitment to fund the Cal Grant program at the 25% level. When approved by the governor, this development will significantly assist nursing students at the undergraduate level.

Although the committee as a whole did not review specific data regarding the need for increased financial aid for students, it was reported that the current lack of financial support makes it difficult for ADN recipients to continue enrollment toward BSN degrees. Historically, only 20% of nurses who earn their associate degree continue their education to receive a baccalaureate, higher nursing degree, or degree in another field. In 1997 this figure dipped to 16%. Some health care agencies provide tuition reimbursement programs for RNs to earn higher degrees; however the amount of tuition reimbursement is modest and covers only a portion of the cost of continuing their education. There should be additional incentives and financial aid resources to take advantage of these programs identified for RNs who have work and family responsibilities.

As with other programs where graduate and professional training is required, assuring a sufficient number of professionals in specialty fields of nursing leadership and management positions, and producing adequate numbers of qualified faculty for California's nursing programs requires an additional level of financial aid for post-baccalaureate students.

Student Support Services

Financial support for nursing students also extends to providing support services once they are enrolled in a nursing program or pre-nursing curriculum. The support services are needed both to encourage enrollment in nursing programs and to increase retention once the students are enrolled. A model for campus outreach and support is the Nursing Outreach and Development Program at San Jose State University (SJSU). This program identifies economically/educationally disadvantaged pre-nursing students who are enrolled in prerequisite nursing courses at both the community college and the CSU. Faculty recruit the students and link them with a peer mentor enrolled in a nursing program. The students participate in a five-week summer program, forming strong support groups and study groups and work closely with future nursing faculty. Many students need this type of support as they make the transition and build the skills necessary for success in highly structured nursing programs. Campus-based programs such as the one at SJSU should continue to be encouraged by the systems as needed.

Clinical Placements for Pre-Licensure Students

Many schools of nursing experience difficulty in placing their students in health care agencies. The clinical experience is a major aspect of nursing education and is required for licensure. Staff nurses are in short supply, and all of their time is necessary to devote to the care of patients. In hospitals these patients are acutely ill and require close supervision; therefore the nurses have little time for assisting in the education of nursing students. This is a significant issue in determining how the state can meet the

workforce needs estimated herein given health care licensure requirements. The health care industry must work with higher education to expand clinical placement opportunities before clinical programs can be expanded significantly.

Newer technologies for teaching students basic and nursing technical skills in simulated clinical situations are available on the market. These packages provide students with realistic experiences in a laboratory setting under the supervision of qualified nursing instructors. These methods are less costly for teaching some of the skills and help to relieve the pressure of finding clinical experiences. Although expensive, the selective substitution of school laboratory experiences for clinical site laboratory could, in some geographic or training areas, permit expansion of enrollments that would otherwise be limited due to lack of clinical learning sites.

Campus nursing programs that receive supplemental funding for additional faculty will be in a stronger position to seek additional clinical placements in hospitals and with other health care providers. Hospitals should be more willing to accept nursing students in patient care areas if they are confident that adequate faculty supervision will accompany those student nurses. Placements in home care and other nursing settings require additional faculty support because of the additional travel to sites that is required of the student nurse and the supervising faculty member.

Student Academic Preparation and Outreach

Students planning to enter nursing and other technical and professional fields need to have a strong background in math and science. The California State University serves the upper one third of California's high school graduates, and the University of California serves the upper one-eighth of California's high school graduates. Recently CSU and UC have aligned the fifteen-unit college preparatory pattern required for admission as a freshman to either segment of public higher education. This alignment will add the second year of laboratory science to the pattern required for admission to CSU and will align with the traditional pattern required for admission for both systems. CSU and UC have required three years of college preparatory mathematics for admission as a freshman for years.

The CSU is working with K-12 to ensure that all students have adequate academic preparation to begin university-level study immediately upon entry. Competency in mathematics is one area of particular concern. Encouraging student success in advanced mathematics will support students in making timely progress toward degrees in fields requiring preparation in mathematics and science.

Community college nurse programs do not have similar admission requirements, and they have experienced increased attrition in the last few years. Lack of academic preparation has been cited as major reason students leave community college nursing programs.

It is critical that outreach efforts be focused towards recruitment and retention, industry partnership incentives, and statewide coordination of activities that ensure nursing programs can be sustained as long as demand continues. Student outreach activities will provide information about nursing careers and how students can prepare for nursing study. Intersegmental outreach activities will be more effective than efforts by a single segment.

The Role of Technology

Through partnerships with the health care industry, a few programs have offered courses online or through video broadcasting. These courses serve adult learners and reach many students through their distance education capabilities. Newer technologies require expensive networking, hardware, software; studios for video broadcasts; and curriculum development time for faculty. Education offered through technology-mediated courses could greatly expand opportunities for ADN and diploma graduates to complete the baccalaureate degree. A comprehensive directory of available distance education programs would provide RNs with choices that best match their adult learning needs (e.g., flexible schedules and course delivery to rural locations) and indicate where spaces are available.

Specialty Preparation for RNs

Industry reports the existence of a shortage of specialty prepared nurses.² Specifically, new graduates of ADN and BSN programs are prepared for generalist practice. Additional specialty training is necessary to prepare them for these designated areas of need, including critical care, labor and delivery, operating room, emergency, and neonatal intensive care.

The basic RN preparation of 36 clinical units of nursing mandated by the Nursing Practice Act (NPA) provides an introduction and basic framework for nursing practice. The areas defined in the NPA for required practice areas are medical surgical, geriatrics, pediatrics, obstetrics and psychiatry. Part of the further education required for the baccalaureate nursing degree includes additional preparation in the areas of community and public health. This preparation provides the graduate with the knowledge and skills necessary to function in accordance with the minimum standards for competent performance.

All RN students are assigned to the labor and delivery area as part of their obstetrics rotation; but the student may not have the opportunity to manage a mother and baby in the final stages of labor and delivery of the newborn. On average, pre-licensure nursing programs provide 30 to 60 hours of clinical pediatric experience, which is insufficient for the specialty area's intense working environment, advanced medical technology, and high patient acuity. Any desired increase in clinical experiences would further strain situations where there are not adequate placements to support RN program clinical placement needs, so selective additional preparation for nurses who choose employment in this area makes best use of scarce clinical placement resources.

In the majority of education programs, students are not assigned to the operating room. In instances where they are, they are assigned a very limited number of hours in the specialty. RN students often miss the opportunity to observe the RN's leadership role as a supervisor of care in the operating room as the circulating nurse and the RN's specialized role in assisting the surgeon.

The recruitment and retention of RNs to work in the high stress, complex environment of the specialty areas of acute care hospitals is a challenge. This challenge extends into the public health and home care arenas.

Additional specialized training is necessary and critical for RNs to be able to expand their knowledge and skills base in order to care for critically ill patients in the emergency departments, critical care units, neonatal intensive care units (ICUs), labor and delivery, and operating room suites. Additionally, the public health nurses and home care nurses require specialized training and mentoring with an experienced

RN so they may carry out their duties effectively. The Department of Health Services also requires one year of experience before they may be hired into these areas. These duties include advanced communication techniques, complex assessments, utilizing community resources effectively, formulating plans of care for both short and long term care, and applying critical thinking skills for advanced decision making.

A three-pronged approach to specialty training is recommended:

- Specific specialty training, ranging from three to six months;
- Mentorship/socialization program, with no responsibility to supervise or evaluate mentoree; and
- Ongoing training and education that includes training of mentors, advanced practice training in specialty areas, and continuing education and support of mentors and mentorees.

Licensed Vocational Nurses (LVN)

Licensed Vocational Nurses work in first level nursing positions as contributing members of the health care team under the direction of a registered nurse or licensed physician. Vocational nurses assist in data collection, plan and implement nursing care, administer medications and treatments with knowledge of therapeutic results, and maintain a safe environment for patients and their families.

In 1996, there were 65,582 individuals licensed to practice as LVNs.¹⁰ Based on projections from the California Employment Development Department (EDD), California will need almost 20,000 more LVNs in 2006 than were licensed in 1996.¹ This number represents a 35% increase in LVNs. However, the number of licensed LVNs increased by less than one percent or only 200 LVNs (to 65,766) between 1996 and 1998.¹⁰

The mid 1990's were characterized by substitution of unlicensed assistive personnel in acute care hospitals for LVNs, downsizing in acute care, restructuring of home health, and system mergers. Employers responding to the CSPCN survey on intention to hire LVNs indicated essentially no change in demand for LVNs between 1997 and 1999 (an increase of 1.7%).² However, there is anecdotal evidence that LVNs are increasingly in demand in home health agencies, assisted living facilities and skilled nursing units. When asked on the 1997-98 CSPCN survey to list personnel whom they were having difficulty recruiting 5 percent of hospital administrators and 25 percent of the skilled nursing facility administrators indicated that they had difficulty recruiting LVNs.²

LVN programs are located in community colleges, private or entrepreneurial career institutes, trade and technical colleges, high schools, adult schools and job corps centers. Funding sources for the programs come from a variety of public and private sources. However, financial support to individuals interested in becoming LVNs could enhance recruitment and retention of individuals in these programs. Outreach to LVN students should identify opportunities for continued education in nursing, e.g., LVN to ADN or LVN to BSN programs.

Higher Education Segmental Issues

The California Community Colleges

There are several issues of concern to the community colleges regarding the cause of the Nursing shortage: 1) enrollments are at capacity in most areas of the state; 2) increased competition for clinical placement of students in health care facilities; 3) an apparent 25% attrition rate (based on data obtained by the CSPCN); 4) prolonged timeline for associate degree nurses to complete bachelor's and Master's degrees in nursing; 5) faculty compensation packages make it difficult to recruit ADN faculty; 6) relatively high cost of nursing and allied health programs due to low faculty/student ratio; and 7) expensive nature of equipment and supplies for "state of the art" instruction. Some of these areas of concern can and are being addressed with the resources available to community colleges. Others may need additional funding to resolve.

If the goal of producing more than 25,000 new nurses by 2006 or shortly thereafter is to be reached, the community colleges will have to produce more than half of these new nurses. Community college nursing programs are, in most areas of the state, at maximum capacity. Qualified students may have to wait two to three semesters before being accepted to the associate degree nursing program. Because of the low faculty-to-student ratio, and thus the high cost and resultant low FTES generated, colleges are reluctant to expand or create new nursing programs to increase the number of spaces available to enroll new students. To overcome this reluctance and still meet the demand for more nurses, additional funding for community colleges is needed. A budget analysis provided below describes the cost of increasing associate degree nursing graduates by an additional 15,000.

Year	Add Capacity	Cumulative Capacity Added	Total Enrollment	Graduates	Additional Graduates	Added Cost	Equipment \$
Current			4,467				
2000	650	650	5,117	3,350		4,030,000	91,000
2001	700	1,350	6,467	3,838	488	8,370,000	189,000
2002	750	2,100	8,567	4,850	1,013	13,020,000	294,000
2003	800	2,900	11,467	6,425	1,575	17,980,000	406,000
2004	850	3,750	15,217	8,600	2,175	23,250,000	525,000
2005	900	4,550	19,867	11,413	2,813	28,830,000	651,000
2006	950	5,600	25,467	14,900	3,488	34,720,000	784,000
2007			25,467	19,100	4,200	34,720,000	784,000
				Total	15,750	164,920,000	3,724,000

Variables:	
Salary	\$50000
Benefits	24%
Faculty/Student Ratio Factor	10
Equipment Factor	\$140
Graduation Rate	75%

As noted earlier, many schools of nursing experience difficulty in placing their students in health care agencies. Clinical experience, or on-the-job experience, is required for licensure. Competition among the different schools for placement is significant. All of the nursing schools cooperate in addressing the competitive issue by a collaborative effort in scheduling clinical placement times. This does not address the greater problem of a short supply of staff nurses available to assist in the education of nursing students.

The average attrition rate for all nursing programs, including those from both community colleges and universities, is 25%. While this rate is not especially high when compared to other programs, if the state is to graduate 15,000 new students over the next six years many more students need to come into the program. In the case of nursing programs, one of the major factors in the attrition rate is the lack of adequate academic preparation, particularly in the areas of mathematics and science. Where possible, colleges have implemented counseling, tutoring and mentor programs to assist students to be successful. The Chancellor's Office is initiating a study to identify variables that lead to student success, and thus identify more specifically those areas in which students need assistance before they reach the nursing program. Adequate preparation of students should result in a higher completion rate.

After completing an associate degree, it can take two to three additional years for nurses to complete a bachelor's degree. The associate degree registered nurse who would like to obtain a bachelor's degree must take challenge exams and other courses prior to advancement to upper division level courses. This process may take two to three years in addition to the time spent in the community college program. Seamless articulation processes must be developed and implemented. Funding for the development of articulation models may be needed.

It is becoming increasingly difficult to locate and hire qualified nursing faculty with both the experience and educational preparation to teach at the ADN level. Starting faculty salaries for Masters-prepared practitioners are woefully inadequate to attract faculty away from industry. In some cases faculty salaries are lower than those paid to staff nurses with Associate Degrees. Masters-prepared clinicians are in short supply and can command larger salaries in hospitals and health care institutions.

Lastly, nursing and health care workers are expected to be familiar with the latest in high technology, computers and computer-controlled medical devices. Even traditional supplies such as intravenous therapy equipment, dressing materials, catheterization kits and numerous other basic supplies are costly and constantly being updated and made more sophisticated. Our primary customers, the hospitals, expect graduates of the nursing program to be competent and well prepared both in the theoretical aspects of patient care as well as the psychomotor skills required of a nurse. The level of physical dexterity required of the incumbent nurse demands prior access to common equipment and supplies for practice and drill. Thus, in addition to the high cost incurred by virtue of the low student-faculty ratio, equipment and supply budgets for nursing programs add to the high cost of the programs.

In regard to the issue of "Specialty Trained Nurses," the shortage problem is severe. Community college curricula are recognized to produce an "entry-level" registered nurse. ADN programs prepare a graduate ready to take the Board of Registered Nursing Licensing examination, which documents a "safe" level of practice. Specialty nursing has not been considered to be part of the generic nursing curriculum for many years. Experiences in operating room nursing and critical care are brief, at best, and generally not included in the Associate Degree Nursing Curriculum. Industry has been increasingly concerned about the difficulty in finding qualified, experienced and well trained nurses to fill vacancies in specialty units and the operating room.

Community colleges have responded to industry demands for additional health care workers including RNs. Supported by the California Community Colleges Chancellor's Office Economic Development Program, Regional Health Occupations Resource Centers (RHORCs) have been developed and receive continuing support through economic development grants. The RHORCs serve to bring together

community college health care programs and the California Health care industry to develop regional collaborative ventures in meeting needs for workers. The RHORCs, the community college Allied Health programs, and health care providers have developed and continue to develop innovative programs. The Orange County RHORC developed a critical care specialty curriculum and offered it for credit at Saddleback College. This program is now being replicated in Salinas through the RHORC located at Hartnell College. Peri-operative Nursing and Surgical Technician Programs have been developed by the Southwestern College RHORC and are being delivered via distance education. Plans are being laid by the RHORCs to develop a specialty program and curriculum in emergency room nursing and an LVN-RN Step-Up program in partnership with Kaiser-Permanente San Diego, Veterans Hospital San Diego and Sharps Health Care system. This program will be offered via distance education to San Diego hospitals and to Cerro Coso Community College. The RHORCs in San Diego, Santa Barbara, and Orange County are working with their regional affiliated community college Associate Degree Nursing programs to develop online, web-based databases for tracking clinical placement and coordinating clinical education slots at regional hospitals and clinics. This will serve both industry and the colleges in making sure that clinical training slots are used most effectively.

The nursing shortage in California is unlike any we have seen before. As the aging population and the influx of immigrants to our state converge to increase demands for health care workers, the ability of the community colleges to respond to the demand is constrained by a multitude of factors. This shortage is aggravated by economic forces, which have given us the lowest unemployment rate in decades and expansion of career opportunities unprecedented in modern history. Additionally, the aging nature of the nursing workforce portends a caregiver shortage of immense proportions if the situation is left unchecked. If the goal of providing high quality health care to Californians is to be met increased and sustained, increased community college funding is essential. The total amount needed to support the growth outlined above has been estimated at \$168.6 million. Absent such funding, real growth in community college nursing programs will be difficult to achieve.

The California State University

The California State University (CSU) is pursuing both short-term and long-term strategies to increase the number of baccalaureate nurses. Two promising strategies involve collaborative programs with community colleges and web-based delivery of instruction in RN to BSN programs.

Collaborative associate and baccalaureate nursing programs should be encouraged. The model program proposed by Sacramento City College and CSU Sacramento demonstrates alternative methods for resource sharing between the CSU and community colleges. Students are enrolled in both institutions, taking the clinical portion of the program through Sacramento City College and the baccalaureate courses through CSU Sacramento. Other collaborative programs are being developed between nursing programs at CSU Stanislaus and CSU Fullerton and the community college programs. Such collaborative programs can be designed to meet the needs and resources of the region where the associate and baccalaureate nursing programs reside.

CSU also is working actively to harness the resources of the World Wide Web for use in teaching delivery and faculty development of simulations through participation in the MERLOT national teaching and learning network. MERLOT is a consortium of higher education systems, consortia, and institutions providing high quality digital learning materials to faculty members who are using the web for both

traditional and distance learning courses.

CSU is in the process of identifying where nursing programs currently have available capacity for admission of new freshmen and transfer students and where capacity might be increased in the future if sufficient strategic programs enrollment funding is provided. There are 13 pre-licensure nursing programs and 17 RN to BSN programs in the CSU. In response to workforce demand several campus programs have expanded, a new program at Sonoma was launched, and demand for admission to CSU's nursing programs varies from campus to campus. The clinical nursing program at San Jose State University is no longer impacted and is able to accommodate all eligible applicants. Sonoma State University launched a new clinical program in 1999-2000 and is able to accommodate all eligible applicants. CSU Fresno recently expanded enrollment capacity in the clinical nursing program. CSU will disseminate information about available spaces in nursing programs throughout the CSU to prospective students and high school and community college counselors.

To ensure that students have an opportunity to adequately prepare for transfer into CSU programs, CSU is funding a statewide effort to identify common lower division prerequisite courses among the CSU clinical nursing programs. The results of this effort will provide information that can be disseminated to community college students seeking admission to one or more clinical nursing programs in the CSU.

Campuses face the challenge of launching new programs or expanding capacity in existing programs within existing funding mechanisms. The CSU will continue to work with the State to address the emerging workforce needs of California, including clinical nursing. CSU estimates that \$15 million a year in increased funding will be needed to support the growing demand for strategic programs improvement with requirements for low student faculty ratios; strategic programs include nursing along with such other programs as engineering and computer science.

With this funding, the CSU is committed to creating academic program slots that will permit four to six percent growth over current strategic program full-time equivalent enrollments. The state's first priority for strategic program growth is expanding opportunities in nursing programs - which requires a coordinated effort with clinical practitioners to fulfill the requirements to increase California's nursing workforce. The most reasonable expectation is the CSU can create 500 new full-time equivalent slots on a permanent, on-going basis over a two-year timeframe. These slots will provide over 7,500 units of instruction each term, which would allow approximately 1,000 new students to enroll in the CSU nursing programs each year.

The CSU and the Governor have reached a partnership agreement that will provide consistent, long-term funding, additional investment in priority areas such as teaching preparation and nursing education. In addition, we have agreed to simplify the transfer process from the community colleges to the CSU through initiatives such as ensuring that students will not lose credits or repeat coursework by offering comparable courses that are therefore more easily transferable for a baccalaureate degree in nursing programs.

The University of California

The University of California's two Schools of Nursing at UCLA and UCSF currently train over 700 master's and PhD students, many of whom go on to teach at the university, college and community

college level. The master's programs at both schools offer a variety of specialties, including nursing administration and primary and acute care nurse practitioner specialties. Building on this foundation, the University is considering strategies for producing increased numbers of master's-level and baccalaureate graduates.

With the support of its medical center, the UCLA School of Nursing has initiated discussions to develop the generic baccalaureate program. Its strong ties to clinical sites in the Los Angeles basin, combined with the campus' charge to significantly increase undergraduate enrollment, create a favorable environment for growth. The current School of Nursing proposal calls for developing the BSN program and admitting the first class of 50 students (juniors) in 2004. A second class would be added the following fall, bringing the program up to its full capacity of 100 students. If planning proceeds as anticipated, the first class will graduate in fall 2006.

UCSF's entry level masters (ELM) program provides an intense academic-clinical training program for graduates with a bachelors degree who want to move directly from basic nursing preparation into specialized advanced practice preparation at the master's level. Clinical placements at Stanford University Hospital and the Lucille Packard Children's Hospital, as well as throughout the UCSF system, have contributed to the program's strength. A preliminary proposal has been developed by UCSF to add an affiliated ELM site at the UC Davis Medical Center that would be able to accommodate 30 students. To expand opportunities for master's students interested in nurse teacher preparation and to help meet the urgent needs of Associate Degree and BSN programs for faculty, a UCSF workgroup has been developed to augment current classes in this area and formalize a nursing education specialty.

The Independent Colleges and Universities

The independent colleges and universities represent an important, flexible, but underutilized resource in the education of California's nurses. In 1997-98, independent colleges produced 42% of the state's baccalaureate and higher degree nurses. During the last shortage of nursing in the mid-1980's, these schools greatly expanded their enrollments in response to the increased demand from applicants and industry's need for nurses. They maintained enrollments in spite of California's recession in the early 1990s when state supported schools, especially the CSU and UC systems experienced major cuts in funding.

A poll conducted for this report in February 2000 revealed that unused capacity exists today in at least eight of the thirteen independent colleges that offer nursing programs. For these eight campuses 604 slots are available. With additional support, 392 more slots could become available within a few years. These combined 996 unused slots account for approximately 9% of total current nursing enrollments in California -- not an insignificant number at a time when thousands of new nurses are needed.

Enrollment Capacity at Eight Independent Colleges

	Current Enrollment 1999-2000	Current Available Seats	Projected Additional Seats	Potential Growth
Bachelors	1,504	356	380	+736
Masters	462	245	12	+257
Ph.D.s	47	3	Not Available	+ 3
Totals	2,013	604	392	+996

Most independent colleges are tuition driven and thus have higher published tuition and fees than do the public colleges. In order to preserve their autonomy and according to constitutional statute, independent colleges do not receive direct aid from the state. However, through the Cal Grant A, B, and C programs at the undergraduate level and a number of modest programs at the post-baccalaureate level, independent college students are eligible to receive state-funded assistance. During 1999-2000, independent college students with financial need and academic merit received approximately \$1.95 million in state funded assistance. This amount was leveraged with over \$660 million dollars in student aid provided by the independent colleges. Thus, state aid for independent college students is matched by a 3:1 investment by the independent colleges.

Recent increases in the undergraduate Cal Grant programs have done much to encourage access and choice to California higher education, thereby increasing access to the independent sector. However, state aid at the post-baccalaureate level is almost all directed at overcoming shortages in the teaching profession. State supported financial aid is needed for other areas of graduate and professional education as well. If such assistance were available, post-baccalaureate nursing students in the independent sector, would, then be able to avail themselves of such financial aid opportunities. Seventy-five percent (75%) of post-baccalaureate independent college students receive financial aid. If state aid were made available to 75% or 188 of the independent colleges students needed to fill the approximately 250 current available seats in the sector, the state investment would total a modest \$1.8 million for one year.

The state and independent sector partnership allows independent colleges to ease the state's enrollment crunch, accentuated by Tidal Wave II, and to educate California residents at a fraction of the total cost to the state, than if the same students were to be educated in the public sector. Additionally, state aid to independent college students allows the sector to "free-up" its own resources to make aid available to other California residents. If the independent sector is to continue to play an important role in educating California's nurses, the state-independent sector financial aid partnership needs to be enhanced at the post-baccalaureate levels.

Through partnerships with the health care industry, a few private programs have been able to offer courses on-line or through video broadcasting. These courses serve adult learners and reach many students through their distance education capabilities. However, these newer technologies require expensive networking, hardware, software; and for video broadcasts, studios. Through general revenues, state supported schools in the community college, CSU, and UC systems have been able to acquire technology needed for establishing system-wide programs.

In the independent sector, there are commercially prepared educational programs to support the necessary technology as well as faculty support. These are added costs that have the potential of being passed on to students as higher tuition. Access to rates paid by the public segments for buying commercial systems for private schools provides the potential of significant cost savings to independent colleges. These resources could greatly expand opportunities for ADN and diploma graduates to complete the baccalaureate.

Key Findings

Finding 1: The changing demographics and growth of the state's population indicate a need for an increased number and changed mix of Registered Nurses (RNs) and specialty nursing.

Approximately half of the RNs employed in California were educated in another state or country, indicative of the state's reliance on the migration of nurses to the state to meet workforce needs. When the number of enrollment opportunities exceeds the number of qualified applicants, the capacity of the state's public and private educational system is unable to produce an adequate supply of nurses. There is also evidence surfacing of declining enrollment in nursing programs and a lack of a coordinated recruitment

strategy to encourage students to apply for admission to nursing programs.

CSPCN research found that health care employers are requiring an increase in the proportion of RNs trained at the baccalaureate level in order to fulfill the increasing complex needs of health care. There is also a need for increased specialized training and continued education.

Finding 2: The nursing workforce is disproportionately balanced with respect to age and other demographic factors.

At 45.7 years, the average age of nurses in California exceeds the national average, and more than 30% of the workforce is over 50 years of age. Conversely, less than 10% of nurses are under thirty. This inverted pyramid of RN supply predisposes the state to an impending departure of its largest and most skilled workforce segment, including a large segment of the nurse educators. Shortly, this will result in the departure of a significant number of nurses trained in certain specialties and deplete the supply of faculty preparing future RNs, leaving a smaller population of providers to care for a burgeoning population of patients as the babyboomer generation reaches Medicare eligibility in 2011. In addition to the growing Medicare population, the overall population of the state is increasing faster and with more ethnic diversity than the nursing population. Recruitment plans must be considered as part of the strategies.

Finding 3: The acuity of patients in hospitals and the community has resulted in an increased demand for highly skilled RNs and additional RNs prepared at the baccalaureate and masters degree levels.

The shift to out-of-hospital services has driven the demand for better prepared nurses to do case management, run clinics, conduct telephone nursing, and provide home health nursing. These tasks require nurses with the competencies and educational preparation for practice requiring highly developed critical thinking, problem solving, and continuous decision making skills.

As managed care penetration and the growth of outpatient/ambulatory care facilities have moved many less acute patients out of the hospital, the intensity of inpatient care provided in hospitals has increased. This concentrated acuity often requires RNs with more educational preparation to manage the care of patients needing complex health care. It has also created a need for additional RNs with specialized training, particularly in critical care, emergency, obstetrics, pediatrics, neonatal intensive care, operating room nursing, and other specialty areas, and nurses prepared to work in home health care agencies.

Finding 4: State-supported nursing programs require additional resources to increase the education of RNs (like other high-cost programs).

The California Community Colleges, the California State University, and the University of California will need strategic programs funding to meet the state's workforce needs.

Finding 5: Clinical placement opportunities need to be developed before nurse-training programs can be expanded significantly.

Many schools of nursing experience difficulty in placing their students in health care agencies. The health care industry must work with higher education to expand clinical placement opportunities before clinical programs can be expanded significantly.

Finding 6: As with other programs where graduate and professional training is required, increased

financial aid is needed to increase nursing enrollments.

This is especially true in the independent sector if these colleges and universities are expected to produce a significant number of nurses trained in specialty areas (e.g., critical care, obstetrics, pediatrics, etc.), for nurse leadership and management, and for the professoriate.

In recent years, California has done an excellent job of increasing support for prospective teachers. Similar support needs to be provided for post-baccalaureate students in other career areas such as nursing.

Finding 7: California requires a system to address efficient statewide workforce planning and production of registered nurses and other workforce professions. Since this issue impacts public health and involves a potentially significant commitment of state funds, the Governor may wish to convene a task force. This task force may include representatives from the four segments of higher education and the health workforce professions. The goal of the task force would be to consider the recommendations of this report in tandem with related nursing issues.

California is ahead of many states in the amount and frequency of data collected to assess the supply of nurses due to the work of the Board of Registered Nursing and the California Strategic Planning Committee for Nursing (CSPCN). However, the state lacks efficient means through educational financing policies and recruitment strategies to attract and train an adequate nursing workforce. Similar situations exist for other health care professions. Demographic and market changes dramatically. They alter the way health care is funded and delivered. Significant resources will be necessary to address both nursing and other health workforce needs. Because of the magnitude and breadth of this issue, a holistic approach, organized by the Governor, might be appropriate.

Recommendations

The nursing workforce challenges California faces are not solved simply by expanding nurse education training programs. Solving these challenges requires the same type of comprehensive planning and implementation that was needed to address the teacher shortage.

If California fails to produce a sufficient number of nurses the health of millions of Californians rich or poor may be at risk. The same type of coordinated effort to produce more nurses that California has begun to use to address the teacher shortage is needed if the State is to strengthen medical care for all Californians. California needs to address the physical well being of its citizenry just as the State addresses the educational well being of that same citizenry.

Four facts related to the nursing shortage are very clear: (1) Current levels of support within education and industry are not sufficient to provide an adequate number of appropriately prepared RNs for the future nursing work force; (2) More support for the creation of student slots (FTEs) and faculty positions is needed; (3) More student outreach and financial aid is needed; and (4) California's needs must be addressed by the State, higher education, and the health care industry.

Recommendation 1: The State should develop a comprehensive long-term strategic plan to recruit, prepare, and retain nurses in our health care systems, including but not limited to, providing necessary funding for nursing programs in the California Community Colleges, the California State University, and

the University of California.

Recommendation 2: Higher education should upon receipt of necessary resources enhance enrollment opportunities and progress to degree for students interested in pursuing nursing careers.

Recommendation 3: The State should fully fund the Cal Grant program to provide the number of grants equal to 25% of the high school graduating class. It should also consider developing a new grant program for California's graduate and professional students. As with other professions, inherent in the grant program would be aid to address the shortages in specialized nurse training and for those seeking to teach in California nursing programs.

Recommendation 4: The health care industry and higher education should find ways to expand delivery of pre-licensure RN nursing education and specialty education.

Recommendation 5: The State should support initiatives to enhance student academic preparation and recruitment efforts by all segments of higher education.

Recommendation 6: The State should support continued work of the California Strategic Planning Committee for Nursing (CSPCN) and the California Postsecondary Education Commission (CPEC), working with the health care industry and education segments, to promote efficient statewide work force planning and production of registered nurses.

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6/2/00

Appendix A

A POSSIBLE SCENARIO FOR INCREASING NURSE GRADUATES IN CALIFORNIA

Year	Associate Degree				Baccalaureate Degree				Entry-Level Master's Degree				Total
	Add	Enroll	Grads	Addl Grads	Add	Enroll	Grads	Addl Grads	Add	Enroll	Grads	Addl Grads	
Current		4467	3449			1563	1601			90	29		
Fall 2000	650	5117	3550		600	2163	1575		120	210	40		
2001	700	6467	3838	488	650	2813	1550	-51	160	370	68	39	376
2002	750	8567	4850	1013	700	3513	1500	-101	190	560	158	129	941
2003	800	11467	6425	1575	750	4263	1622	21	210	770	278	249	1746
2004	850	15217	8600	2175	800	5063	2110	509	240	1010	391	391	2976
2005	900	19867	11413	2813	850	5913	2635	1034	270	1280	578	549	4296
2006	950	25467	14900	3488		5913	3197	1596		1280	758	729	5714
2007		25467	19100	4200			3797	2196					6298
2008							4435	2834					2834
2009													
2010													
		Target = 15031		15750		Target = 10,038		8038		Target =		2084	25180

Assumptions. 75% of enrollees graduate two years after program admission in ADN programs; 4 years after program admission in BSN programs; and 3 years later in ELM programs, although ELM students can enter the workforce as RNs after the first year.

Source: California Strategic Planning Committee for Nursing

Appendix B

Ad Hoc Committee on Nursing

Celina Arias-Romero
Program Analyst
California Community College
Chancellor's Office
Division of Educational Services

Kay Baker
Associate Dean
UCLA School of Nursing

Cindy Banta
NICU
Sutter Memorial Hospital

Teresa Bello-Jones
Executive Officer
Board of Vocational Nursing and Psychiatric Technicians

Barbara Blake
United Nurses Association of California

Dixie Bullock
President
Saddleback College

Glenda Canfield
Service Employees International Union

Sandy Chapman
Administrator
Lucile Packard Children's Hospital at Stanford

Carol Comeau
President
ADN South
Santa Ana College

James L. Comins
R.N., Director
California Community Colleges
Economic Development Network-Health Care

Hedy Dumpel
Nursing Practice Director

California Nurses Association

Mary Jo Gorney-Moreno

President

Board of Registered Nursing

Dorel Harms

Vice President

California Healthcare Association

Delores Jones

Consultant, External Affairs

Kaiser Permanente

Marilyn Flood

UCSF School of Nursing Associate Dean

Academic Programs

UC San Francisco School of Nursing

Cheryl Goldfarb-Greenwood, CNS

Lucile Packard Children's Hospital at Stanford

Bobbie Gorenberg

President

California Association of Colleges of Nursing

San Jose State University

Mary Dee Hacker

Vice President, Patient Care Services

Children's Hospital, LA

Jean Harlow

Supervising Nursing Education Consultant

Board of Registered Nursing

Sarah Keating

Association of Independent California Colleges and Universities

Ellen Lewis

California Strategic Planning Committee for Nursing

UC Irvine

Connie Little

Director

CAHSAH

Marian Lowe

Executive Director

American Nurses Association\California

Judy Martin-Holland
President
American Nurses Association\California

Rick Martin
Vice President, Patient Services
Hoag Hospital

Patricia McFarland
Executive Director
Association of California Nurse Leaders

Kay McVay
President
California Nurses Association

Office of the President
University of California

Peggy Perkins
President
Emergency Nurses Association, California State Council

Rebecca Petersen
President
HCEN

Phyllis Reading
Executive Director
American Association of Critical Care Nurses

Gayle Sarlatte
Director Perioperative Services
ORNCC

Karen Sechrist
Project Investigator
California Strategic Planning Committee for Nursing

Ann Shuman
Supervising Nursing Education Consultant
Board of Vocational Nursing and Psychiatric Technicians

Nancy Sprotte
California State University
Office of the Chancellor
Associate Director
Enrollment Management Services

Ruth Ann Terry

Executive Officer
Board of Registered Nursing

Monica Weisbrich
ORNCC

Diane Welch
Director of Nursing Programs
Sacramento City College
President, ADN Directors North

Barbara Whitney
Dean, Economic Development
California Community Colleges

Juan Yniguez
Vice President
Association of Independent California Colleges and Universities

Staff:
Alice Takahashi
Nursing Education Consultant
Board of Registered Nursing